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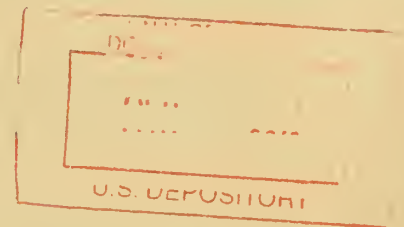
Sept 41

UNITED STATES DEPARTMENT OF AGRICULTURE
Bureau of Agricultural Economics ✓

FOOD WASTE MATERIALS

A SURVEY OF URBAN GARBAGE PRODUCTION,
COLLECTION, AND UTILIZATION

By Walter H. Stolting
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Washington, D. C.
September 1941

Gratitude is expressed to all those city officials whose replies to the questionnaire shown herein, made this work possible. The author also wishes to thank C. A. Burmeister and R. O. Been for many suggestions and to acknowledge indebtedness to George E. Keon and Charles H. Meyer who edited replies to the questionnaire and assembled the data upon which this report is based.

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CONTENTS	PAGE
The farmer's interest in food wastes	1
Plan of survey	2
Regional summaries of garbage production, collection, and disposal - 1939-40 - for 247 reporting cities, each with population of 25,000 or more persons	3
Present utilization of garbage for hog feeding	7
Estimates of total urban garbage output	8
Effective limits on garbage feeding of hogs	8
Problems associated with effective use of garbage	14
Summary	16

The Farmer's Interest in Food Wastes

Wastes in the marketing and home consumption of perishable farm products reach an enormous total each year. The wastes in the marketing of fresh fruits and vegetables alone would amount to several hundred million dollars a year if valued at retail prices. These wastes restrict the diets of consumers and increase the spread of marketing costs between farmers and consumers, obliging consumers to pay more at retail and returning lower prices to producers.

There are two means of reducing these losses. The first is to reduce waste in marketing and in the homes; the second is to utilize the waste materials to the best advantage.

The purpose of the survey here reported was to ascertain the quantities of waste food materials represented in the production of urban garbage and to ascertain for several geographic areas the way in which these materials were utilized or disposed of. The chief methods of disposal include hog feeding, reduction to reclaim grease, incineration, use as land fill, and burial. This report makes no recommendations as to what disposal methods are

most economic for this will obviously depend upon circumstances within the locality concerned. The facts presented here merely indicate total volume of production and its division into several uses.

Producers of hogs and growers of corn and other feeds have been fearful of the potential threat in competition from garbage feeding of hogs. According to the analysis and estimates shown in this report this is largely a bugaboo. They indicate that under the most favorable circumstances the full utilization of all urban garbage in hog feeding could not add so much as 2 percent to the United States production of pork and lard.

Plan of the Survey

The survey was conducted by means of a questionnaire (fig. 1) which was mailed to the proper administrative authority of each of the 412 cities containing a population of 25,000 or more. A somewhat similar survey was made by the United States Food Administration in the last World War, (during late 1917 and early 1918) and the information obtained in that survey was helpful in formulating administrative policies relating to food production.

Replies to the questionnaire were received during December 1940 and the first few months of this year from 247, or 60 percent, of the 412 cities to which it was sent. Regions from which the percentage of returns was relatively high were the North Central and the Mountain and Pacific States. Those from which the proportion of returns was lowest (about 50 percent) were New England and the East South Central States. The smallest proportion of returns was from Florida, Alabama, and Mississippi, and, in consequence, the data presented herein for the two regions in which these States are located may not be truly representative of those regions. For the country as a whole the data, based on all the reports received, appear to be rather reliable.

Regional Summaries of Garbage Production, Collection, and Disposal - 1939-40 - for 247 Reporting Cities, Each with Population of 25,000 or More Persons

As this survey was confined to cities having a population of 25,000 and over, the proportion that this population group represents of the total population of the United States is of interest in appraising the information obtained. The Bureau of Census reports show the total United States population at the time of the 1940 enumeration to number approximately 131,669,000 inhabitants of which nearly 74,424,000, or 69.2 percent, were classified as living in urban areas. ^{1/} The population of the 412 cities of 25,000 and over numbered approximately 52,749,000, and represents 40 percent of all the population. Table 1 shows the regional distribution of this city population group, both with respect to the 247 cities which returned the

^{1/} An urban area is defined by the Bureau of the Census as an incorporated place having a population of 2,500 or more, and townships having a total population of 10,000 or more and a population density of 1,000 or more per square mile.

FIGURE I

Bureau of Agricultural Economics
Division of
Marketing and Transportation Research

Food Waste Survey

Period covered: From _____ To _____

- (1) (a) How much garbage was produced by all sources in your city during above period _____ tons.
- (b) How much of this was:
- Vegetable garbage _____ tons.
- Animal garbage _____ tons.
- Total _____ tons.
- (2) (a) How much of this production was collected by the city? _____ tons.
- (b) How much of this was:
- Vegetable garbage _____ tons.
- Animal garbage _____ tons.
- Total _____ tons.
- (3) The remainder was collected by whom?
- | <u>Type of collector</u> | <u>Amount</u> | <u>How disposed of</u> |
|--------------------------|---------------|------------------------|
| Pig-feeder _____ | _____ tons | _____ |
| Other(specify) _____ | _____ tons | _____ |
| _____ | _____ tons | _____ |
- (4) How is the garbage collected by your city disposed of?
- | <u>Method</u> | <u>Amount</u> | |
|--------------------|---------------|--|
| Incineration _____ | _____ tons. | |
| Reduction _____ | _____ tons. | |
| Burial _____ | _____ tons. | |
| Pig-feeding _____ | _____ tons. | |
| Other _____ | _____ tons. | |
- (5) Do you have a mixed collection system? _____
- If so, please describe it _____
- _____
- (6) Do you have an effective local ordinance prohibiting the inclusion of glass, crockery, metal, etc., with garbage?
- _____
- (7) If a demand for garbage should develop from pig feeders in your vicinity could your garbage collections be made available to them.
- YES _____ NO _____ (Check)
- If not what would be the chief difficulties in the way of using your collections for pig-feeding. _____
- _____

Table 1.- Population distributions in the United States and
of cities included in survey 1/

	:	:	Population of cities and towns		
	:	:	25,000 and over		
Group or region	:	population	:	247 cities:	165 cities
	:	:	:	Total	: reporting : not
	:	:	:	:	on survey : reporting
Total United States	131,669,275				
All rural	57,245,573				
All urban	74,423,702				
Cities 25,000 and over:	52,748,999				
All cities and towns :					
of 2,500 to 25,000...	21,674,703				
Region:					
New England.....	4,640,655	2,949,279	1,691,376		
Middle Atlantic	16,093,985	13,379,457	2,714,528		
East North Central.....	13,112,140	11,385,328	1,726,812		
West North Central.....	3,661,503	2,719,312	942,191		
South Atlantic	4,616,676	3,291,785	1,324,891		
East South Central.....	1,891,962	1,110,694	781,268		
West South Central.....	3,037,883	1,836,909	1,200,974		
Mountain	835,805	583,413	252,392		
Pacific	4,858,390	4,340,648	517,742		
Total	52,748,999	41,596,825	11,152,174		

1/ U. S. Census Reports 1940.

questionnaire sent to them and the 165 that failed to report. The cities reporting comprised 60 percent of all the cities in the group surveyed and they represented 79 percent of the total population in that group.

Table 2 summarizes the data obtained from the 247 cities relative to the amount of garbage collected in each region and its disposal. For the entire group the yearly average collection per capita amounted to approximately 302 pounds, of which 80.9 percent was reported as collected by the cities, 11.5 percent by hog feeders, and 7.6 percent by others. There is a rather wide range in the quantities collected as between regions. In New England and in the Mountain States the quantity per capita was only slightly above 240 pounds, whereas in the South Atlantic and East South Central States it ranged from 373 to 384 pounds. The high production in the South probably reflects the more extensive use of certain vegetable products which are highly productive of waste when used for human consumption. The longer growing season and proximity to producing areas in the South makes these products available over a longer period of the year than in other areas.

Regions in which the cities collect a relatively high proportion of the garbage output include the Middle Atlantic, South Atlantic, South Central, and East North Central States. In these four regions the cities reporting collected from 86 to nearly 89 percent of the total. In the Mountain States their collections amounted to only about 36 percent of the output and in New England only about 47 percent. In these two regions hog feeders collected relatively large proportions - nearly 64 percent in the Mountain States and about 46 percent in New England. Collections by other groups were of significant volume only in the South Atlantic States, and in this region the amount was only 22 percent of the total.

Mention was made that approximately 81 percent of the total garbage production reported by the 247 cities was collected by the cities. These cities reported that 50 percent of the quantity they collected was disposed of by incineration, 27.8 percent by burial, 18.5 percent as food for hogs, 3.5 percent through reduction plants, and 0.2 percent by other means. The extent to which these methods of disposal are used vary greatly by regions. Incineration is used most extensively in the Middle Atlantic States and in the South. In New England and in the Pacific and West North Central the proportion incinerated is very small. New England is the only area in which any significant proportion of the garbage collected by the cities is disposed of by reduction and in that area this quantity represents 20 percent of the total.

Disposal by burial is carried on most extensively in the East North Central States where nearly 49 percent was reported as handled in this way. Other regions using this method to a considerable extent are the East South Central States and the Middle Atlantic States, the proportions so disposed of representing one-third and one-fourth of their collections, respectively. The cities in the Mountain States and in the South Atlantic and West North Central groups reported using this method only to a limited degree.

Table 2.- Garbage production, collection, and disposal in pounds per capita for 247 cities during one year, 1939-40 1/

Area	Unit	Production	Collected by		Disposal of garbage collected by the cities					Total hog feed
			Produced by cities	Produced by other groups	Incineration	Reburial	Hog-feeding	Other		
New England	Pounds	242.1	112.5	110.5	19.1	8.6	22.5	11.5	69.9	180.4
	Percent	100.0	46.5	45.6	7.9	7.6	20.0	10.2	62.2	74.5
Middle Atlantic	Pounds	306.2	271.0	25.1	10.1	185.2	13.2	69.2	3.4	28.5
	Percent	100.0	88.5	8.2	3.3	68.3	4.9	25.6	1.2	9.3
East North Central	Pounds	315.4	270.8	25.2	19.4	103.4	6.0	132.2	24.0	49.2
	Percent	100.0	85.9	8.0	6.1	40.0	2.2	48.8	8.9	15.6
West North Central	Pounds	247.6	181.7	45.2	20.7	16.8	-	14.1	146.4	191.6
	Percent	100.0	73.4	18.2	8.4	9.2	-	7.8	80.6	77.4
South Atlantic	Pounds	373.3	325.1	26.8	21.4	229.3	12.2	21.5	61.5	83.3
	Percent	100.0	87.1	7.2	5.7	70.6	3.7	6.6	18.9	23.7
East South Central	Pounds	383.9	291.3	8.5	84.1	191.7	-	99.6	-	8.5
	Percent	100.0	75.9	2.2	21.9	65.8	-	34.2	-	2.2
West South Central	Pounds	285.5	249.4	12.5	23.6	152.0	-	30.1	67.3	79.8
	Percent	100.0	87.3	4.4	8.3	60.9	-	12.1	27.0	28.0
Mountain	Pounds	241.1	85.7	153.2	2.2	34.3	-	-	51.4	204.6
	Percent	100.0	35.6	63.5	0.9	40.0	-	-	60.0	84.9
Pacific	Pounds	270.5	169.2	38.6	62.7	7.6	-	21.8	139.8	178.4
	Percent	100.0	62.5	14.3	23.2	4.5	-	12.9	82.6	66.0
Total	Pounds	302.2	244.6	34.8	22.8	122.2	8.5	68.2	45.3	80.1
	Percent	100.0	80.9	11.5	7.6	50.0	3.5	27.8	18.5	26.5

Garbage collected by the cities is used most extensively for hog feeding in the Pacific and West North Central States where more than 80 percent of the total is so used. Cities in New England and in the Mountain States also reported a relatively large proportion of city-collected garbage being used for hog feeding, - 60 percent in the latter area and 62 percent in the former. Regions in which cities reported very small proportions of city-collected garbage used for hog feeding are the Middle Atlantic and East South Central States.

Present Utilization for Hog Feeding

Combining the proportions of city-collected garbage used for hog feeding with the proportions of the total supply collected by hog feeders and, assuming that the combination indicates the approximate quantity of the entire supply used for hog feeding, the conclusion is reached that about 26.5 percent of the garbage produced in the 247 cities reporting is disposed of as hog feed. The variation by regions, however, is very great. In the Mountain States nearly 85 percent of the total garbage output of the cities reporting is used for hog feeding. In the West North Central States the proportion so used reaches 77 percent; in New England it is about 75 percent; and in the Pacific group it is about 66 percent. In the East South Central States only slightly more than 2 percent of the output is reported as being used for hog feeding and in the Middle Atlantic States about 9 percent is so used. In the East North Central States the proportion is 15.6 percent and in the South Atlantic and West South Central States 24 and 28 percent, respectively.

It will be noted that in four regions the proportion of the garbage output used for hog feeding is now relatively large. In only one of these regions - the West North Central group of States - is hog production a major enterprise in its agricultural system and in this region corn is the principal feed used for fattening hogs.

Regions in which greater utilization of garbage for the feeding of hogs appears to be possible, from the standpoint of present methods of their garbage disposal, are the South and the Middle Atlantic and East North Central States. Climatic conditions and excessive losses from swine diseases may limit this use in the South. Moisture and high temperatures hasten decomposition of organic materials and thus would make garbage feeding more difficult and also more objectionable to a community than is true where conditions are less unfavorable. The risk of death loss from cholera is always great, in feeding garbage, unless hogs are immunized, and immunization treatments are used less commonly in the South than in other regions, and this in itself may tend to restrict garbage feeding there.

The Middle Atlantic region in some respects is somewhat like New England, yet only about 9 percent of its garbage output, as indicated by the reports received, is used for hog feeding, as contrasted with 75 percent in New England. Information obtained from other sources indicates that this figure of 9 percent probably is slightly smaller than the actual amount because considerable feeding of garbage is done in northern New Jersey with waste material obtained from hotels and restaurants. This garbage is collected by the feeders and apparently was not included in the reports furnished by the cities.

In addition to this northern New Jersey area the feeding of garbage in the Middle Atlantic region is concentrated again in a few counties of southern New Jersey and the wastes used there apparently are obtained largely from the Philadelphia area. Feeding is done to a limited extent in scattered localities throughout Pennsylvania and New York State. Most of the garbage from the large metropolitan area of New York City and in cities of northern New Jersey, that is collected by the cities, is either incinerated or used for land fill.

In the East North Central States hog production is already an important enterprise but is associated primarily with corn production. As only about 16 percent of the garbage output of the cities in that region is being used for hog feeding, possibilities are indicated of some expansion in garbage feeding there. At present, most of the garbage is being disposed of by burial and incineration. Except where burial increases the fertility of the land no economic return is obtained from either of these methods of disposal.

The situation regarding garbage production, collection, and disposal in the 10 largest cities of the United States is shown in table 3. A relatively large proportion of the urban production is concentrated in these limited areas. Similar information is available for many other urban centers upon request. In addition, some information on attitudes of local authorities toward making garbage available for feeding can also be obtained. The records are too voluminous to be published here but information will be made available through communication with the Bureau of Agricultural Economics.

Estimates of Total Urban Garbage Output

Table 4 shows by regions the estimated production of garbage in all the cities of 25,000 population and over, and its utilization. Figure 2 shows the regional production graphically and figure 3 shows the quantity of collections and disposal. These estimates are based on the per capita averages of the 247 reporting cities which were given in table 2. The degree of error in these estimates depends on the extent to which the smaller cities differ from the larger cities in their production and utilization of garbage on a per capita basis. The proportion of the larger cities that reported and that are included in table 2 is somewhat greater than the proportion of smaller cities. As the estimates in table 3 are based on the data in table 2, they are weighted disproportionately in the same way. Any tendency either to over- or to under-estimate cannot bulk large in the final figures because the population in the nonreporting cities is small in relation to the total (11 million out of 52 million).

Effective Limits on Garbage Feeding of Hogs

The estimates of the quantities of garbage used for hog feeding in each region (table 3) are supported by data obtained from a survey made by the Bureau early in 1940, to ascertain the number of hogs that are currently fed garbage. 3/ This survey was made in cooperation with the

3/ Extent of Garbage Feeding of Hogs. United States Department of Agriculture Bureau of Agricultural Economics, June 1940. (Processed)

Table 3.- Garbage production, collection, and disposal in 1939 as reported for the 10 largest cities in the United States 1/

City	Population (1940)	Garbage produced		Collected by cities	Collected by		Disposal of city-collected garbage by				
		Total	Per capita		Hog feeders	Others	Incineration	Reduction	Burial	Hog feeding	Other methods
		Tons	Pounds	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons
New York	7,454,995	1,223,780	328	1,223,780	2/		953,780		270,000		
Chicago	3,396,808	360,000	212	346,666		13,334			346,666		
Philadelphia	1,931,334	196,252	203	41,544	154,708		12,753	28,791			
Detroit	1,623,452	200,000	246	191,000	9,000		190,000				1,000
Los Angeles	1,504,277	214,637	285	194,229	20,408					194,229	
Cleveland	878,336	123,567	281	100,918		22,649	100,918				
Baltimore	859,100	84,591	197	84,591			84,591				
St. Louis	816,048	80,000	196	67,023	12,977					61,062	5,961
Boston	770,816	112,130	291	33,198	55,370	23,562		33,198			
Pittsburgh	671,659	105,000	313	105,000			105,000				
Total	19,906,825	2,699,957		2,387,949	252,463	59,545	1,447,042	61,989	616,666	255,291	6,961

1/ All records for calendar years 1939, except for Los Angeles, St. Louis, and Boston. Los Angeles records are for period July 1, 1939 to June 30, 1940. St. Louis records are for period April 1, 1939 to March 31, 1940. Boston records are for calendar year 1938.

2/ Estimate of collections by hog feeders not given.

Table 4.- Estimated garbage production, collection, and disposal for the 412 cities having populations of 25,000 or more, based on per capita figures shown in table 2, 1939-40

Section	Population	Total production	Collected by cities	Collected by other groups		Disposal of garbage collected by the cities			
				Hog feeders	Other	Incineration	Reduction	Burial	Other
	Number	tons	tons	tons	tons	tons	tons	tons	tons
New England	4,640,655	562	261	256	44	20	52	27	162
Middle Atlantic	16,093,985	2,464	2,181	202	82	1,490	107	557	27
East North Central	13,112,140	2,068	1,776	165	127	711	40	867	158
West North Central	3,661,503	453	333	83	38	31	-	26	268
South Atlantic	4,616,676	862	750	62	49	529	28	50	142
East South Central	1,891,962	363	276	8	80	181	-	94	-
West South Central	3,037,883	434	379	19	36	231	-	46	102
Mountain	835,805	101	36	64	1	14	-	-	22
Pacific	4,858,390	657	411	94	152	18	-	53	340
Total	52,748,999	7,963	6,402	953	609	3,226	226	1,719	1,220
									10

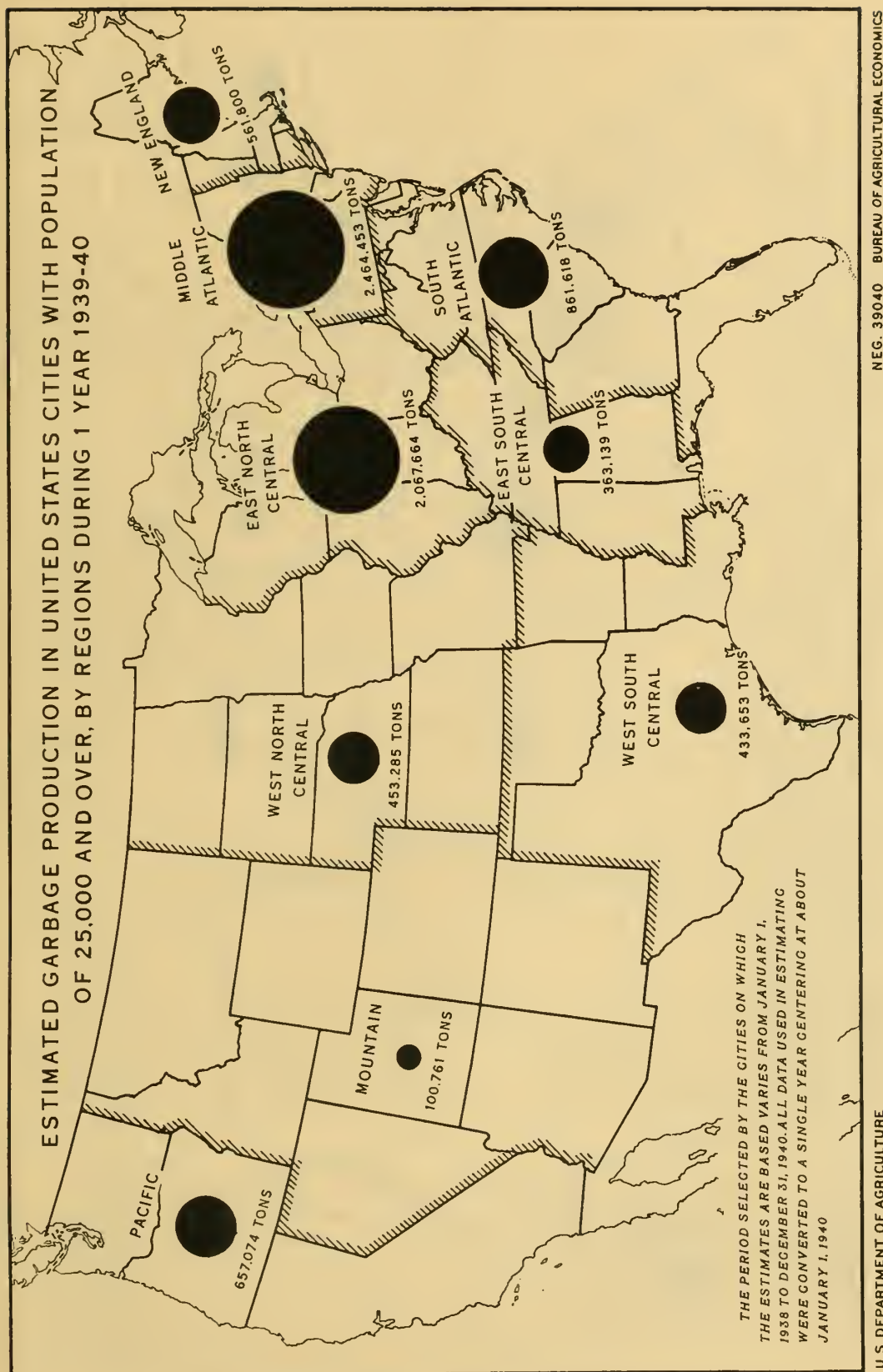


FIGURE 2

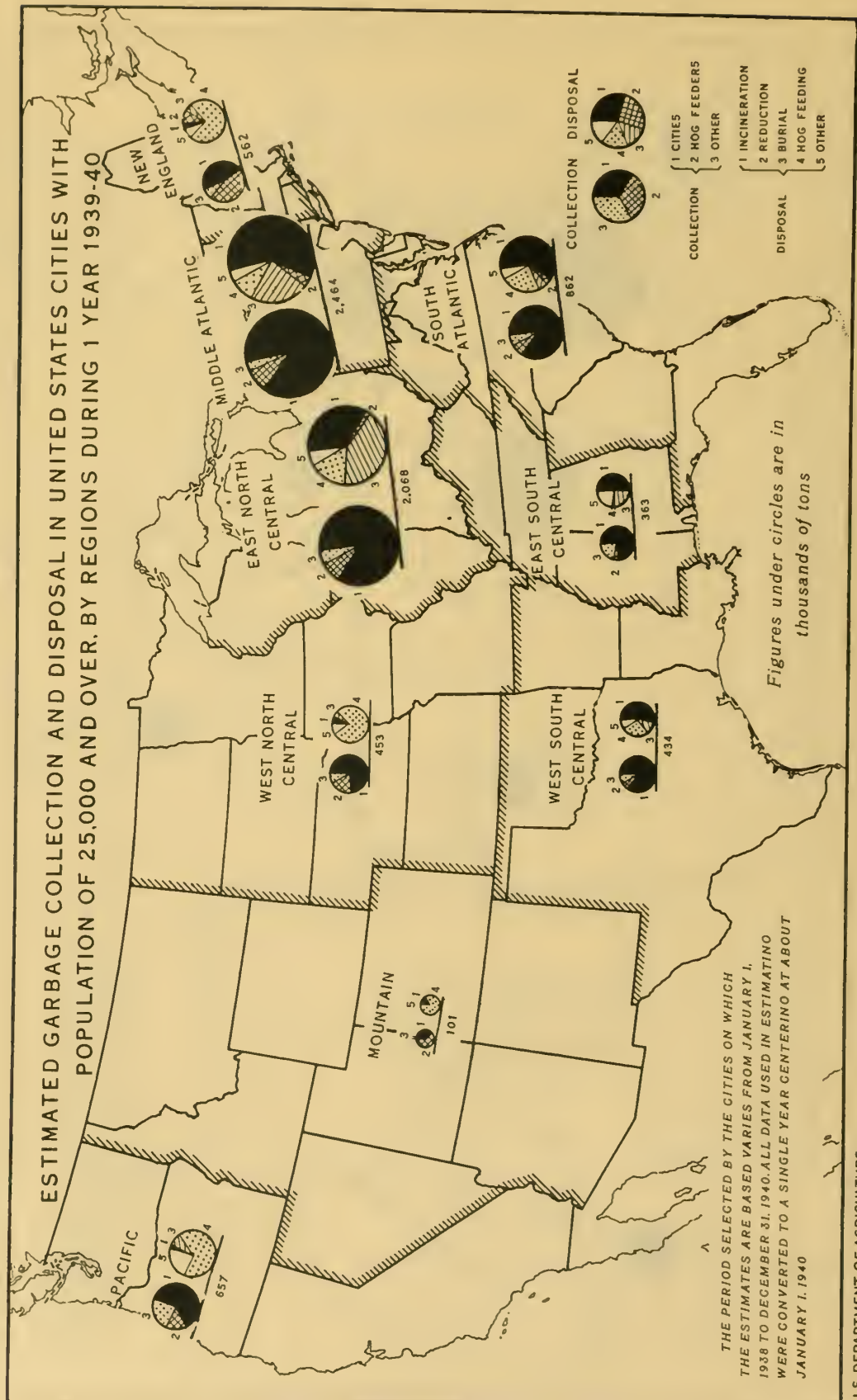


FIGURE 3

Agricultural Extension Service and the reports received from county agents indicated that the number of hogs fed on garbage annually in this country is probably around 1-1/4 million head, and that nearly half of these are fed exclusively on garbage.

The regional data from the survey on the number of hogs fed are in fairly close agreement with the regional data on the quantities of garbage fed (table 3). Where discrepancies exist, they appear to be due mainly to the omissions of reports from particular localities in one or the other of the surveys, thus impairing comparability in such instances.

The total yearly production of garbage in the 412 cities of 25,000 population and over is estimated to be nearly 8 million tons, and of this quantity approximately 2,173,000 tons is indicated as being used for feeding hogs. Feeding experiments indicate that, on the average, a gain of 100 pounds of live weight can be obtained from feeding 3 tons of garbage. An increase of 100 pounds live weight per head is probably about the average weight gain obtained by most hog feeders who use these waste materials, as the general practice is to start feeder pigs on garbage when they reach a weight of 75 to 125 pounds and to sell them for slaughter at a weight of 175 to 250 pounds. If 3 tons of garbage without supplemental feeds will produce 100 pounds live weight gain in hogs when used for hog feeding, this is equivalent to saying that this quantity will produce about 55 pounds of pork and 15 pounds of lard, as these are the average yields of these products obtained from 100 pounds of live hog. A ton of garbage, therefore, when used for hog feeding may be considered as sufficient feed to produce 18 pounds of pork and 5 pounds of lard. Using these figures as conversion factors, one can arrive at a rough approximation of the maximum possible production of pork and lard that could be obtained by feeding urban garbage if the entire output were utilized for this purpose.

The estimated yearly production of 8 million tons in the 412 cities of 25,000 population and over, if used entirely for hog feeding, would produce approximately 144 million pounds of pork and 40 million pounds of lard. These 412 cities include 71 percent of the total urban population of the country. If the garbage production per capita in the smaller urban units is of about the same proportions as in the larger cities, the maximum output of pork from all urban garbage if used entirely for hog feeding would be around 200 million pounds, or the equivalent of about 2 percent of the total production of pork from all hog slaughter in the United States in 1940.

The actual production, at present, is probably between one-fourth and one-third of this indicated maximum, or around 50 to 60 million pounds, since only about 27 percent of the total garbage output of the cities of 25,000 and over was indicated as being used for hog feeding and the proportions for the smaller urban units are probably not very different from those of the larger.

In some localities a larger proportion of the urban output probably could be used for hog feeding, but in others conditions are unfavorable for utilization in this way and little expansion in this kind of feeding appears possible. As approximately 40 percent of the output of the cities is now disposed of by incineration and nearly 23 percent by burial, any very large expansion in the use of garbage for hog feeding would have to be done with that now disposed of by these two methods.

A majority of the reporters replied in the affirmative to question 7 on the schedule:

"If a demand for garbage should develop from pig feeders in your vicinity could your garbage collections be made available to them?"

Replies to question 6,

"Do you have an effective local ordinance prohibiting the inclusion of glass, crockery, metal, etc., with garbage?"

indicate that in some municipal areas collection methods and regulations would have to be changed to permit hog feeding. However, a majority of the reporting cities are already trying to keep garbage free from articles injurious to hogs. Replies to question 5 covering technical details of handling disposal of garbage indicate that additional difficulties may be encountered from present systems of collection but these difficulties are not insurmountable.

Problems Associated With Effective Use

Effective utilization of garbage production involves many problems pertaining to economics, technological processes, sanitation, and municipal management. At times the interests of the various groups who deal with these problems are similar but at other times they are in direct conflict or they overlap to such an extent as to hinder the most effective accomplishments in disposal and utilization of garbage. Cooperative effort, therefore, is necessary if complete wastes are to be avoided. Some of the chief problems and phases that receive the attention of the different groups may be summarized briefly as follows:

Public-health officials are perhaps the most deeply concerned with garbage disposal at the present time. They have shown how the incidence of the disease, trichinosis, is much higher in garbage-fed hogs than hogs which are fed on other rations. This fact emphasizes forcibly the need of keeping the public informed regarding the danger of eating uncooked pork. Pork from all hogs, regardless of the feed used, may contain the trichinae parasite but studies made by the Bureau of Animal Industry show that this parasite is destroyed when subjected to a temperature of 137° F. ^{4/} It is also destroyed when pork containing it is subjected to extremely low temperatures or to certain curing methods commonly used by most processors. To insure absolute protection from the danger of acquiring trichinosis, consumers should avoid eating uncooked or improperly cooked pork in any form, whether fresh or cured.

Animal husbandry specialists at various times have been interested in testing the feeding value of garbage and the best methods of handling it from the standpoint of economy, prevention of disease, and obtaining the maximum gains in weight.

^{4/} U.S.D.A. Service and Regulatory Announcements, B.A.I. January 1940, and Leaflet No. 34 U.S.D.A. Trichinosis, May 1929.

Sanitary engineers are constantly working on the different phases of garbage disposal. They have devised various methods, such as burial, fill, incineration, and reduction, any one or any combination of which might be best suited for individual municipalities. Their principal objective is to minimize the cost of garbage collection and disposal. This involves technological as well as economic problems.

The interest of economists in this work centers around studies of costs and prices to determine the most economical methods of collection and disposal. Among others, two rather common groups of problems fall into this category. One is the analysis of prices of grease in connection with the use of the reduction process of disposal, and the other is the analysis of cost and management problems in connection with the use of garbage for hog feeding. 5/

The cooperation of all these groups would be necessary for the attainment of greatest gain, if a definite program for complete utilization of garbage waste were to be undertaken. Experts from all these groups can contribute to a common fund of knowledge which would be helpful in the development of a coordinated program for economic use of food wastes.

The purpose of this report is to disseminate certain facts concerning the production, collection, and disposal of garbage. Beyond this objective lie many questions. What developments in this field will be brought about in the near future are difficult to foretell. At any rate, it is true that each day in the United States a vast quantity of food matter is currently left to waste. This survey gives estimates of its volume and present utilization.

5/ For a more complete account of some of the work in the above fields, reference is made to the following publications:

American Journal of Public Health, Vol. 29, No. 2, February 1939.
Studies on Trichinosis XI, The Epidemiology of Trichinella Spiralis
Infestation and Measures Indicated for the Control of Trichinosis.

Public Health Reports, Vol. 55, No. 24, June 14, 1940. Studies on
Trichinosis XIV, A Survey of Municipal Garbage Disposal Methods as Related to
the Spread of Trichinosis.

Feeding Garbage to Hogs. (Processed.) U.S. Dept. of Agr., Bureau of Animal
Industry, March 1938.

Refuse Disposal in American Cities, April 1931 - U. S. Chamber of Commerce

Extent of Garbage Feeding of Hogs. (Processed.) U. S. Dept. of Agr.,
Bureau of Agricultural Economics, June 1940.

Summary

(1) Estimates of garbage production, collection, and disposal given in this report apply to the 412 cities in the United States with population of 25,000 or more persons, as compiled in the 1940 census. Out of a total urban population of 74,423,702 persons, 52,748,999 live in these cities.

(2) Out of an estimated annual total of nearly 8 million tons of garbage produced in these 412 cities, 2 million tons is indicated as being used for feeding hogs.

(3) If the per capita garbage production for the remainder of the urban population (cities and towns of 2,500 to 25,000 persons) is of about the same proportions as in the larger cities, the maximum output of all pork and lard from all urban garbage, if it were used entirely for hog feeding, would be around 200 million pounds and 56 million pounds, respectively; 200 million pounds of pork is the equivalent of about 2 percent of the total production of pork from all hog slaughter in the United States in 1940. This represents the maximum potential possibilities of garbage hog feeding in the United States. The actual quantity of pork and lard production would be somewhat less because in some areas garbage feeding of hogs would not be feasible. Already, production from garbage feeding amounts to one-fourth of this maximum.

(4) The cooperation of public-health officials, animal husbandmen, sanitary engineers, and economists is necessary for the effective utilization of food waste materials in the United States.

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